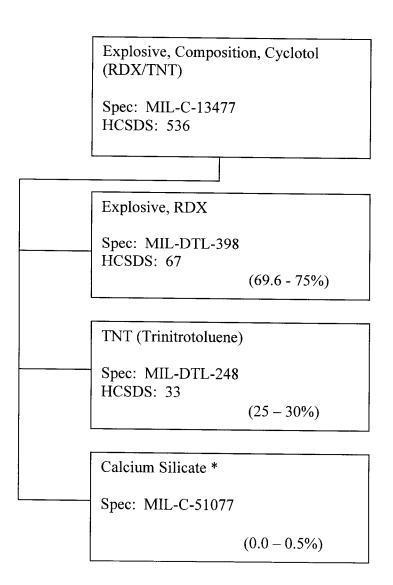
HAZARDOUS COMPONENT SAFETY DATA STATE (HCSDS)			ΓEMENT	1. DATE PREPARED (YYYYMMDD) 2004/01/08		DD-A&T(AR)1687
2. MATERIAL/COMPONENT/ASSEMBLY			· · · · · · · · · · · · · · · · · · ·	3. NUM	BER	4. REVISION
Explosive, Composition, Cyclotol (RDX/TNT)				536	D	
5. APPLICABLE FEDERAL AC	- ,	,	ETY CLAUSE			D
		28.7102	_			
6. FRICTION TEST	PART	I - SENSITIVITY	(Apparatus and Co	omparison		
PA			PA		8. ELECTRO	STATIC DISCHARGE TEST
Steel/Fiber = Unaffected		14 Inches		20/20 No Fire at 0.25 Joules		
9. FIRE	T40 AUTO IONIS		- HAZARDS			
	10. AUTO IGNIT	egrees C	FLASH POINT	LASH POINT 12. DECOMPOSITION PRODUCTS		OSITION PRODUCTS
High	1	egrees F)	NA Toxic, Avoi		void Inhalation and Ingestion	
13. FLAMMABLE AND/OR EXP			EXPLOSION	-		VE TEMP. 16. DUSTS
a. LOWER PERCENT NA	b. UPPER PER N	RCENT JA	High		(5 Sec.) 265° C (3	500°F) Unknown
17. HEALTH HAZARD INFORM	ATION (Toxicity)		-		18. UNPACK	ED (In-Process) HAZARD CLASS
Moderate by Inhalation ar	•					uantities involved)
19. SPECIAL REQUIREMENTS	(If additional space	ce is needed, use plaii	n bond paper)		<u> </u>	
Ref-Spec: MIL-C-13477						
Approved Packaging Drav	wings: 7548644	4, 7548645 (See Att	ached Sheet)			
High Explosive - Danger		`	,			
* See Attached Sheets	040					
See Attached Sheets						
PART	III - SHIPPING	G/STORAGE CLA DANCE WITH AP	SSIFICATION PROVED PAC	OF ITE	M WHEN PAWINGS	ACKED
20. DOD HAZARD CLASS/DIV	21. DOD STORA	AGE COMPATIBILITY	22. DOT HAZA			23. DOT CONTAINER MARKING
1.1	GROUP	D		1.1D		*
24. PREPARED BY (Initiator)						
a. TYPED OR PRINTED NAME		b. SIGNATURE	//		c. ORGANIZA	ATION
NINH VO			X > X		System Safet RDECOM-A	ty Office
25. CONCURRED IN BY		2760	000		KDECOM-A	ARDEC
a. TYPED OR PRINTED NAME		b. SIGNATURE			c. ORGANIZA	ATION
ZIEM T. LUU			namy	~	System Safet	y Office
V	21752 2502505	Wan 6	- 10		RDECOM-A	RDEC
26. SAFETY CHIEF OR AUTHOR  a. TYPED OR PRINTED NAME		b/ SIGNATURE			c. ORGANIZA	ITION
CHAU L. NGUYEN		Chan L	ngup	w	System Safet RDECOM-A	y Office
The information relating to safety (herein referred to as "safety data") contained in this document is limited to those instances when the document is provided as a part of a procurement/production package which involves the development, testing, storage, manufacture, modification, renovation, demilitarization, packaging, transportation, handling, disposal, inspection, repair or any other use of the item (material/component/assembly) which is specified in the contract. The safety data contained herein are examples which shall be used by the contractor to alert contractor personnel as well as other personnel of hazards associated			is made that prevent any warnings ma any act or fa personnel to contractor of or property a connection w	compliant accident by not be illure to a the haza responsind for the vith the personner.	nce with the into persons or appropriate. of by the Goverds of the iteration in the see safety of the erformance o	f the item. No representation of the item. No representation provided will property or that additional Neither the foregoing nor ernment in regard to alerting meshall affect or relieve the eafety of contractor personnel enter general public in the contract, or impose or ent for such safety.



<sup>\*</sup> Information on hazards associated with commercial chemicals can be obtained from the supplier. Such information may already be available in the DOD Hazardous Material Information System (HMIS) DOD 6050.5.L, which is available from the U.S. Government Printing Office, Superintendent of Documents, Washington, D.C.

#### **Special Requirements:**

1. In accordance with applicable parts of 49CFR for proper description, packaging, marking and classification, the following Hazard Classification is assigned to the subject item:

DOD Hazard Class/Div/SCG: 1.1D

DOT Hazard Class: 1.1D

(Section 173, Subpart C, Section 173.52)

DOT Label: Explosive 1.1D

(Section 172, Subpart E (172.411 (a) & (b)) DOT Proper Shipping Name (PSN): Hexolite (Section 172, Subpart B and Section 172.101)

UN Serial Number: 0118

DOT Container Marking: Hexolite

UN: 0118

Part Number: MIL-C-13477

NSN: (as applicable)

DOT Authorization: (as applicable)

(Section 172, Subpart D, Section 172.301(a) and 172.320(a))

Packing Method: PI-112

Explosive Weight for QD Determination: lbs (kgs): 1.0000 (0.4536)

<u>Nomenclature</u>	<u>NSN</u>	<b>DOT</b> Authorization
Contact (CO CO/ DDV/OO OO/ TDITIO CO/ CLL CO	1000 00 000 011	
Cyclotol (69.6% RDX/29.9% TNT/0.5% Calcium Silicate)	1376-00-005-5116	EX 1993030374
Cyclotol (69.6% RDX/29.9% TNT/0.5% Calcium Silicate)	1376-00-007-4781	EX 1993030375
Cyclotol (75% RDX/25% TNT)	1376-00-007-4872	EX 1993030376
Cyclotol (70% RDX/30% TNT)	1376-00-764-8066	EX 1993030377
Cyclotol (75% RDX/25% TNT)	1376-00-908-4212	EX 1988010551

2. CAUTION: Explosives must be tested for compatibility with any material not specified in the production-procurement package with which they may come in contact. Materials include other explosives, solvents, adhesives, metals, plastics, paints, cleaning compounds, floor and table coverings, packing materials and other similar materials, situations and equipment, explosives include propellants and pyrotechnics.

## 3. Additional Sensitivity Data:

a. Impact -

B of M Apparatus = 
$$60 \text{ cm}$$
  
NOL, Type 12 Tool,  $H_{50} = 33 - 47 \text{ cm}$ 

b. Susan Test: Threshold velocity  $\sim 180$  ft/sec ( $\sim\!55\text{m/s});$  generally difficult to ignite but capable of large reaction.

#### c. Skid Test:

Impact Angle (deg (rad))	Drop HT ( <u>ft (m))</u>	<u>Event</u>
14 (0.24) 45 (0.79)	0.88 (0.27) 28.0 (8.53)	4

#### d. Gap Test:

Large Scale (mils (mm)) = 
$$1.646$$
 (41.8)  
Small Scale (mils (mm)) =  $(0.25 - 0.41)$ 

## e. Safe Separation Test:

	Dista	nce
<u>Test Configuration</u>	<u>Meter</u>	<u>Feet</u>
27.2 Kg (60 lb) Cardboard Shipping Container	5.49	18.00
27.2 Kg (60 lb) Aluminum Box	7.32	24.00

# 4. Sensitivity (Comparison Values):

## a. Friction (Apparatus)

Explosive	Steel Shoe *PA	Fiber Shoe *PA	No Reaction in Pressure- ABL Pendulum Velocity of 8 ft/sec and 20 trials (psi)
Lead Azide	Explodes	Explodes	
PETN	Crackles	Unaffected	
TNT	Unaffected	Unaffected	
RDX	Explodes	Unaffected	
RDX Type II, Class 5	5		400
Black Powder	Snaps	Unaffected	
M1 Propellant	Unaffected	Unaffected	
M9 Propellant	Snaps	Unaffected	
M30 Propellant	Unaffected	Unaffected	
HMX Class 1			390
HMX Class 5			1334

# b. Impact (Apparatus)

	Ball Drop			*ERL (PA	<b>BOE Impact</b>
	Impact 50%	PA	Bureau of	Version) Type	@3 3/4 inch
<b>Explosive</b>	Point (in)	<u>Inches</u>	Mines, cm	12, 50%, cm	and 10 trials
Lead Azide	$15.7 \pm 1.0$	3	10-17	-	
PETN		6	17	<12	
TNT		14	95-100+	80	
RDX		8	32	23	
RDX Type II	,				
Class 5		-	-	28.8	
Black Powder	r	16	32	-	
M1 Propellan	ıt	6 (grain)	-	-	
		4 (powder)	-	-	
M9 Propellan	ıt	2-3	-	-	
M30 Propella	ınt	4	-	16.2	
Comp B		-	-	39	
HMX Class 1					2 Explosions
HMX Class 5	5				8 Explosions
DXN-1	$4.6 \pm 0.5$				•

- 4. Sensitivity (Comparison Values): (Cont'd)
  - c. Electrostatic Discharge, Bureau of Mines Apparatus

<b>Explosive</b>	<u>Joules</u>
Lead Azide	0.007
PETN	Confined 0.21/Unconfined 0.06
TNT	Confined 4.4/Unconfined 0.06
RDX	>11.03
Black Powder	Confined 0.8/Unconfined >12.5
M1 Propellant	11.03
M9 Propellant	5.2
M30 Propellant	>12.5

d. Electrostatic Discharge, Approaching Electrode

	ESD 50% energy (joules)
Lead Azide	0.12
DXN-1	0.12

e. Explosive Temperature (5 Seconds)

RDX	$260^{0} \text{ C} (500^{0} \text{ F})$
Lead Azide	$340^{0} \text{ C } (644^{0} \text{ F})$
PETN	$225^{0} \text{ C } (437^{0} \text{ F})$
Black Powder	$427^{0} \text{ C } (801^{0} \text{ F})$

f. Auto-ignition Temperature

RDX	$197^{0} \text{ C } (387^{0} \text{ F})$
Lead Azide	$290^{0} \text{ C } (554^{0} \text{ F})$
PETN	$160^{0} \mathrm{C} (320^{0} \mathrm{F})$
Black Powder	$464^{\circ} \mathrm{C} (867^{\circ} \mathrm{F})$

- \* ERL Energetic Research Lab
- \* PA Picatinny Arsenal